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ELECTRONIC PAYMENT SYSTEM USING MULTIFUNCTIONAL PREPAID CARDS  
AND METHOD OF SELLING PREPAID CARDS

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Technical Field

The present invention relates to an electronic payment system for a  
5 multifunctional prepaid card that can be commonly used in payment for both purchasing  
various goods and using various services, and a method of selling the multifunctional  
prepaid card.

Background Art

In recent years, according to an explosive growth in users of the Internet owing to  
10 the simplicity of Hyper-Text Mark-up Language (HTML) based World Wide Web (WWW)  
and the development of multimedia technology, there have been developed numerous  
applications to offer a variety of services in Cyberspace. In particular, since various kinds  
of cyber shopping malls emerged over the Internet, much attention has been paid to  
electronic commerce systems and electronic payment methods and systems essentially  
15 accompanied by the electronic commerce are being intensively studied.

Digital cash and credit cards are payment means that are most widely used in the  
virtual space. Also, prepaid cards have been in widespread payment means exclusively  
used in connection with calling service, rather than the Internet service.

Although the digital cash is electronic money exclusively used for the Internet,  
20 that is, capable of being used over the Internet instead of cash, it is quite a complicated  
procedure to use the digital cash. In the case of using credit cards as payment means,  
transaction statements or private personal information may be divulged or may be  
fraudulently used by hacking. Also, since the teenagers who are target users of the  
Internet cannot hold credit cards and credit card number, and authorization for payment are  
25 chargeable, credit cards are not suitable for payment of a small amount. Further,  
conventional prepaid cards can only be used in limited services, such as calling services.

Disclosure of the Invention

It is an object of the present invention to provide an electronic payment system for  
a multifunctional prepaid card which can be used as an integrated payment means for

small-amount payment in chargeable sites or shopping malls over the Internet, chargeable contents for PC communications, or prepaid voicemail service, as well as general functions as prepaid cards used for payment of local/long-distance/mobile/international calling services, based on a single Personal Identification Number (PIN), and a method for selling  
5 the multifunctional prepaid card.

To accomplish the above object of the present invention, there is provided an electronic payment system including a multifunctional prepaid card having a predetermined Personal Identification Number (PIN), shopping/service providing means for providing services and goods to a user of the multifunctional prepaid card and  
10 requesting the PIN of the multifunctional prepaid card for payment, and a prepaid card management system for managing state/balance information for PIN for the multifunctional prepaid card on a database, making a settlement by referring to the balance amount of the corresponding PIN if payment for a specific PIN is requested by the shopping/service providing means, and updating the settlement result on the database,  
15 wherein a single prepaid card can be comprehensively used in payment for use of various services and purchase of goods.

According to another aspect of the present invention, there is provided a method of selling a multifunctional prepaid card including the steps of accessing a cyber card site over the Internet and selecting a card selling site, inputting predetermined order  
20 information and a payment method for payment for purchase of the multifunctional prepaid card, making a payment by the selected method and allocating a PIN, if a 'For gift' option is selected, transferring the purchased prepaid card to a party designated by the user, and if an 'For user' option is selected, entering a password and activating the corresponding PIN.

#### Brief Description of the Drawings

25 The above object and advantages of the present invention will become more apparent by describing in detail a preferred embodiment thereof with reference to the attached drawings in which:

FIG. 1 illustrates an overall configuration of an electronic payment system according to the present invention;

30 FIG. 2 is a flow diagram illustrating an operational procedure of an electronic payment system according to the present invention;

FIG. 3 illustrates a site map in the case of constructing a home page of a cyber card site according to the present invention;

FIG. 4 illustrates a procedure of selling a multifunctional prepaid card according to the present invention;

5 FIG. 5 is a flow diagram illustrating a procedure of recharging a multifunctional prepaid card according to the present invention;

FIG. 6 is a flow diagram illustrating a procedure of buying goods using a multifunctional prepaid card according to the present invention;

10 FIG. 7 illustrates a multifunctional prepaid card according to the present invention in using mobile telephone network;

FIG. 8 is a flow diagram illustrating a procedure of using a multifunctional prepaid card according to the present invention by a mobile telephone network;

FIG. 9 is a flow diagram illustrating a procedure of accessing a foreign site using a multifunctional prepaid card according to the present invention; and

15 FIGS. 10A through 10I illustrate examples of screens displayed based on various functions run by the present invention.

### Modes for Carrying Out the Invention

A preferred embodiment of the present invention will now be described with reference to the accompanying drawings.

20 First, a multifunctional prepaid card system used in the present invention is an integrated multifunctional prepaid card system which enables payment for various services such as Internet shopping malls whose transaction volumes are tremendously increasing nowadays, small-amount payment in chargeable sites or chargeable contents for PC communications, prepaid voicemail service or the like, and which functions as a prepaid  
25 card used for mobile phone services. In other words, the multifunctional prepaid card according to the present invention can be commonly used in payment for usage of various services including the Internet service, calling services, prepaid voicemail service, PC communications, mobile phone services, and for buying various goods.

FIG. 1 illustrates an overall configuration of an electronic payment system  
30 according to the present invention.

Referring to FIG. 1, the electronic payment system according to the present invention includes a local Public Switched Telephone Network (PSTN) 110a, a mobile telephone network 120, the Internet 130 and a foreign PSTN 110b. Also, the electronic payment system according to the present invention includes a prepaid calling card system (PCCS) 140, a settlement server 150 and a payment gateway (G/W) 160. The payment G/W 160 is connected to a bank 161 and a credit card company 162. A personal computer 111 for PC communications and a computer 112 for Electronic Data Interchange (EDI), a public telephone set 113 and a prepaid voicemail system 114 are connected to the PSTNs 110a and 110b. A customer PC 131, a game parlor's PC 132 and a shopping mall or chargeable site 133 are connected to the Internet 130. Prepaid wireless phones 122 are connected to the mobile telephone network 120. The PCCS 140 is implemented by an intelligent network platform and has a database (DB) server 141 connected thereto.

In the above-described configuration, integrated payment can be made for mobile phone services, PSTN services, PC communication services, prepaid voicemail services, chargeable Internet site accessing, purchase in the Internet shopping mall and so on, using the multifunctional prepaid card according to the present invention.

FIG. 2 is a flow diagram illustrating an operational procedure of an electronic payment system according to the present invention, in which a user 202, an Internet shopping mall 204, a cyber card site 206, a card selling agent 208, a PCCP 140, a settlement server 150 and a payment G/W 160 are shown by virtue of operational relationship between the respective operating bodies.

Referring to FIG. 2, the user 202 purchases a multifunctional prepaid card having a predetermined monetary value at the cyber card site 206 or the card selling agent 208. Here, the monetary units of the multifunctional prepaid card include a 5,000-won valued card, 10,000-won valued card, 20,000-won valued card, 30,000-won valued card, 50,000-won valued card and 100,000-won valued card. In the case of purchasing the multifunctional prepaid card at the card selling agent 208, a real prepaid card is provided to the user 202. In the case of purchasing the multifunctional prepaid card at the cyber card site 206, a virtual prepaid card is given to the user 202 over the Internet. The user 202 who purchased the multifunctional prepaid card can make payment immediately after using various chargeable services, such as calling services, Internet services or PC communication services, as described above.

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For example, when the user 202 accesses an Internet chargeable site or the Internet shopping mall 204, the user 202 enters a Personal Identification Number (PIN) (to be abbreviated as PIN# hereinafter) for payment. The accessed Internet shopping mall 204 requests authentication of the PIN# to the settlement server 150 through the payment G/W 160. The settlement server 150 exchanges the information with the PCCP 140 and transfers the authentication result of the PIN# to the Internet shopping mall 204 via the payment G/W 140. After the user 202 uses the service, billing for using the service is requested to the settlement server 150 through the payment G/W 160. Then, the settlement server 150 communicates with the PCCP 140 for settlement and then notifies the settlement result to the shopping mall 204 through the payment G/W 160. In the preferred embodiment of the present invention, the settlement server 150 and the PCCP 140 are separately processed for the sake of fast and convenient implement of the invention. However, the settlement server 150 and the PCCP 140 may run on a single computer, and even the payment G/W 140 may also be incorporated therein.

FIG. 3 illustrates a site map in the case of constructing a home page of a cyber card site according to the present invention. Referring to FIG. 3, the cyber card site includes major options including Purchase of Multifunctional Prepaid Card (expressed as 'Cyber Pass' on the drawing), Recharging of Cyber Pass, Registration/Change of Password, Change of User Information, Inquiry of Use Statement, Verification of Online Payment or Refund of Balance, and incidental options including Contents, Shopping, Calling Service, Public Inquiry Service, What is Cyber Pass? or About Us/News.

The procedure of purchasing the cyber pass will later be described with reference to FIG. 4, and the procedure of recharging the cyber pass will be described with reference to FIG. 5. The option of 'Registration/Change of Password' is for newly registering a password prior to use of the purchased cyber pass or changing the already registered password. The option of "Change of User Information" is for changing the user information entered when purchasing the cyber pass.

The options of 'Contents' include Astrology/Lottery, Music, Movie, Cartoon and so on to provide useful contents. The options of 'Shopping' include Computer, Home appliances, Women, Fashion/accessories and so on. The options of 'Calling service' include Calling service and Calling information service. The options of 'Public Inquiry Service' include Delivery of real estate registration copy and Delivery of official document.

The options of 'Inquiry of Joining Associate Program' include Associates/Information on the associate program, Application, and Recommendations and Help. The options of 'What is Cyber Pass?' include Concept of Cyber Pass, Why cyber pass?, How to sell cyber pass?, How to use cyber pass?, and Use Agreement of Cyber Pass. The options of 'About Us/News' include company related information.

FIG. 4 illustrates a procedure of selling a multifunctional prepaid card according to the present invention through a cyber card site.

A user accesses the cyber card site run on a settlement server to enter a site selling a multifunctional prepaid card, that is, cyber pass. Then, the user makes an entry of information such as item, number or monetary value, on an order sheet shown in FIG. 10A, and then enters user information including name, resident number and address, and a payment method, using the screen shown in FIG. 10B.

Then, if the payment method is credit card payment, the user enters credit card number and password. If the payment method is bank account payment, the user enters bank account number and password. Then, the billing request is made. The payment is made by a payment gateway and then confirmed. Then, as shown in FIG. 10C, PIN# corresponding to the respective bills is allocated.

Thereafter, the user is allowed to select an option of either 'For gift' or 'For user', and if the 'For gift' option is selected, a recipient and a cyber pass design are entered by the user, as shown in FIG. 10D and an e-mail message is prepared to then be transmitted to the recipient.

**As** If the 'For user' option is selected, as shown in FIG. 10E, the user's password is registered and then the PIN# is activated by a PCCP server to complete the purchase procedure. After completion of the purchase procedure, the settlement server notifies the purchase statement to the user.

FIG. 5 is a flow diagram illustrating a procedure of recharging a multifunctional prepaid card according to the present invention. Referring to FIG. 5, after the user accesses the cyber card site over the Internet in order to recharge the multifunctional prepaid card, the user accesses a recharge site. If the recharge site is accessed, a screen shown in FIG. 10F is displayed for entry of a PIN#. Next, as shown in FIG. 10G, the user information can be changed and the user is allowed to select a recharge amount, that is, the value amount to be added to the card, and a payment method.

Then, according to selection of the payment method, a screen for payment request is displayed. If there is a recharge request, payment is made through a payment gateway. After confirming that payment has been made, the information of the corresponding PIN# is updated by the PCCP server and the balance and state information of the corresponding PIN# are transferred to the settlement server. The settlement server registers transaction statements on its database, completes recharge and then notifies the recharge result to the user.

FIG. 6 is a flow diagram illustrating a procedure of buying goods using a multifunctional prepaid card according to the present invention.

Referring to FIG. 6, after the user access an Internet shopping mall for purchasing goods, the order sheet provided by the shopping mall is filled out. If a multifunctional prepaid card according to the present invention is selected as a payment method, payment request is made to the payment gateway. The payment gateway receives a PIN# and password through a screen displayed on the shopping mall and requests authentication of the card to the settlement server. The settlement server requests the PIN# information and state and balance information to the PCCP server and then receives the information to determine whether payment is to be made. If it is determined that payment is possible, the PIN# information is updated, and the card information, that is, the state and balance information, is changed by the PCCP server. Then, the transaction statement is registered, and the payment result is notified to the user.

If the user accesses the site to request an inquiry of the information of usage details, the transaction statement and the information of usage details are offered to the user, as shown in FIGS. 10H and 10I.

FIG. 7 illustrates a network for distributing PIN# of a multifunctional prepaid card according to the present invention in using mobile telephone network. Referring to FIG. 7, a mobile phone 702 owned by the user, a base station 704, a mobile telephone network 710, a gateway 720, the Internet 730, a multifunctional prepaid card service provider 740, and a user's PC 750 are shown. Here, the mobile telephone network 710 includes a Short Message service Center (SMC) 712 for providing character messaging service, and an Automatic Response Service (ARS) system 714.

Referring to FIG. 7, the mobile phone 702 is connected to the mobile telephone network 710 through the base station 704 to make a direct call to a called party or to

purchase the multifunctional prepaid card according to the present invention. Here, the prepaid card is distributed in the form of a PIN# through the Short Message Service (SMS). The mobile telephone network 710 provides general mobile communication services, SMS through the SMC 712 and ARS through the ARS system 714. The mobile telephone network 710 and the Internet 730 are connected through a gateway 720. The user can access a site of the multifunctional prepaid card service provider 740 through the Internet 730 using the user's PC 750. The multifunctional prepaid card service provider 740 operates a service site over the Internet and manages its associates (not shown) to provide PIN# to the mobile telephone network 710, thereby selling prepaid cards using a mobile phone.

FIG. 8 is a flow diagram illustrating a procedure of using a multifunctional prepaid card according to the present invention by a mobile telephone network, in which the information flow between a user (customer), a mobile phone service provider and a prepaid card service provider is shown. First, the prepaid card service provider provides PIN# to the database of the mobile phone service provider. Then, the user enters a special number to access a site of the mobile phone service provider and the mobile phone service provider makes announcement through an ARS system so that the user select a desired service. If the user selects a 'Purchase of a Prepaid Card' option, a PIN# is extracted from a PIN# database to be provided to the user through a character message. Then, the user accesses a site of the prepaid card service provider and then registers a password. Accordingly, the prepaid card service provider authorizes the use of the purchased prepaid card.

The user can use the prepaid card at any associates and the mobile phone service provider charges the usage of phone services monthly together with the amount of the prepaid card purchased by the user. If the user makes payment for the bill, the mobile phone service provider offers the money to the prepaid card service provider, with a commission of a predetermined amount deducted, to complete adjustment. The prepaid card service provider adjusts the amount with its associates according to the users' detailed statement of usage of prepaid cards.

FIG. 9 is a flow diagram illustrating a procedure of accessing a foreign site using a multifunctional prepaid card according to the present invention. In order for a customer 902 to access a foreign site 908 using a cyber pass according to the present invention, a



foreign PIN# must be allocated to the customer 902. A cyber pass settlement system 904 must hold PIN# which can be used in foreign countries, to provide a foreign PIN# to the user in response to the customer's request, the PIN# given by paying a predetermined amount to a foreign card service provider settlement system 906.

5 Referring to FIG. 9, the cyber pass settlement system 904 requests a foreign prepaid card service provider settlement system 906 to provide foreign PIN#. According to the customer's request, the foreign prepaid card service provider settlement system 906 provides foreign PIN# to the cyber pass settlement system 904. If the cyber pass customer 902 requests switch-over into a foreign PIN#, the corresponding foreign PIN#  
10 having a monetary value as requested is allocated to the customer 902.

Then, the customer 902 accesses the foreign site 908 to purchase goods or use services using the foreign PIN#. Settlement for payment for goods and/or services used by the customer 902 is made between the foreign site 908 and the foreign prepaid card service provider settlement system 906.

15 As described above, the multifunctional prepaid card according to the present invention allows customers to use foreign sites using a foreign PIN# in cooperation with a foreign prepaid card service provider. Also, the customer may use the PIN# directly at a foreign site while making a settlement between the foreign site and a cyber pass settlement system.

## 20 Industrial Applicability

As described above, the multifunctional prepaid card system according to the present invention provides a variety of functions, including, real-time billing, recharge (adding the monetary value) of a card, inquiry of usage details, refund of balances, setting validity period of a card, mixing goods, and the like. Also, the prepaid cards can be  
25 varied according to users' request. In particular, a single prepaid card according to the present invention can be comprehensively used as payment means for chargeable sites over the Internet, such as MP3 sites, online movie or cartoon sites, stock sites, small-amount payment at cyber shopping malls for purchase of books or CDs, cyber gift coupon mailing, PC communications, or telephone voicemail services as well as telephone services.